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Question Paper Code	12567
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B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Eighth Semester

Electronics and Communication Engineering

20ECEL806 - PHOTONIC NETWORKS

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

	<i>Marks</i>	<i>K- Level</i>	<i>CO</i>
1. Outline the non-linear effects in WDM systems.	2	K2	CO1
2. Assess the need for couplers and isolators.	2	K2	CO1
3. Define SONET and SDH.	2	K1	CO2
4. Propose the three topologies used for fiber optic network.	2	K2	CO2
5. How does the optical layer facilitate communication in optical networks?	2	K1	CO3
6. How do you realize light path in any optical networks?	2	K1	CO3
7. What is the significance of Optical Time Division Multiplexing (OTDM) in photonic packet switching?	2	K2	CO4
8. Define the function of linear divider and combiner in LLN networks.	2	K1	CO4
9. Name one type of optical amplifier commonly used in long-haul fiber optic networks.	2	K1	CO6
10. Why is optical safety important in optical communication systems?	2	K1	CO6

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) i) Explain the different types of Optical filters used in Networks.	5	K2	CO1
ii) Demonstrate the different types of optical switching technologies.	8	K2	CO1
OR			
b) Explain in detail about the function & the principle of an isolator and circulator? Give example of isolator and circulators Applications.	13	K2	CO1
12. a) Explain the concepts of media access control protocols in broadcast and select networks.	13	K2	CO2
OR			
b) i) Infer the Layered architecture of SONET/SDH with neat diagram.	8	K2	CO2
ii) Explain in detail Network management and Protection architectures of SONET/SDH.	5	K2	CO2
13. a) Discuss the role of the optical layer in facilitating high-speed data transmission in optical networks.	13	K2	CO3

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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OR

b) Describe in detail about routing and wavelength assignment strategies followed in optical networks. 13 K2 CO3

14. a) Explain the operating principle of packet interleaved OTDM Multiplexer & demultiplexer. 13 K2 CO4

OR

b) Explain in detail about creation of unwanted light paths in a linear light wave networks (LLN) and propose the strategies to overcome the issues. 13 K2 CO4

15. a) Analyze the factors contributing to power penalties and their implications on system performance and reliability. 13 K2 CO6

OR

b) Examine the importance of wavelength stabilization in optical networks and its impact on system performance. 13 K2 CO6

PART - C (1 × 15 = 15 Marks)

16. a) Describe about broadcast and select PON and WDM PON architecture of future Networks. 15 K2 CO5

OR

b) Compare and contrast various optical access network architectures, such as Passive Optical Networks (PONs), Active Optical Networks (AONs), and Hybrid Fiber-Coax (HFC) networks, in terms of their integration with Optical Time Division Multiplexing (OTDM) technology. 15 K2 CO5